



# Research Note

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## Passenger Vehicle Crash Involvement Rates By Vehicle Model Year

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### Introduction

An estimated 11 million passenger vehicles were involved in police reported motor vehicle crashes in 2000 and in 2001. This total reflects a crash involvement rate of over twenty passenger vehicles per minute for the years covered in this study. It also indicates that approximately five percent or one in every twenty passenger vehicles registered in the U.S. was involved in a reported motor vehicle crash in each of these years. These statistics come from the National Highway Traffic Safety Administration's Fatality Analysis Reporting Systems (FARS), which contains data on traffic crashes that involve a fatality and from the National Automotive Sampling System General Estimates System (NASS-GES), which is a database containing a sample of police reported motor vehicle crashes that result in property damage or injury from which estimates are calculated. The estimates reported are subject to sampling error since they are not based on a census of all crashes. Vehicle registration data are compiled by R. L. Polk & Company in the National Vehicle Population Profile (NVPP).

Passenger vehicles include passenger cars, pickup trucks, sport utility vehicles and vans that have a gross vehicle weight rating (GVWR) of less than 10,000 lbs. These vehicles types are frequently used for both personal transportation and utilitarian purposes such as commercial, agricultural and recreational use.

Every year, new vehicle models are introduced to the marketplace. This note reports the rate at which these passenger vehicles are involved in

traffic crashes of different severity and the involvement rates per registered vehicle by the model year of the vehicle. Vehicles involved in crashes are classified into three types based on the most severe injuries sustained in the crash: fatal crashes, injury crashes, and property damage only (PDO) crashes. Overall-involvement rates reflect all three types of crashes.

### Methodology

The NVPP database reflects the number of registered vehicles on the road as of July 1<sup>st</sup>. For each calendar year studied, the latest model years do not include new cars sold during the last six months of that year. In an effort to estimate a full year's vehicle registration data, the number of new cars registered after July 1<sup>st</sup> are added to those vehicles that are already on the road. R. L. Polk provides new car registration data in the New Car and Light Truck (NCRLT) database. This adjustment better reflects the actual vehicle population for these particular model years. The low involvement rates for the last two model years are the result of the limited exposure of these recently purchased vehicles, some of which may not have been on the road at all.

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**Table 1. Passenger Vehicles Involved in Crashes and Involvement Rates  
Per Registered Vehicle by Model Year and Crash Severity  
2000**

Vehicle Model Year	Registered Vehicles	Number of Vehicles Involved in				Involvement Rate per 100,000 Registered Vehicles
		Fatal Crashes	Injury Crashes	PDO Crashes	All Crashes	
< 1985	24,259,018	4,548	314,000	669,000	988,000	4,073
1985	6,193,836	1,278	86,000	119,000	206,000	3,326
1986	7,881,350	1,710	108,000	182,000	292,000	3,705
1987	8,650,952	1,916	128,000	218,000	348,000	4,023
1988	9,972,386	2,355	163,000	289,000	454,000	4,553
1989	10,661,016	2,756	188,000	323,000	514,000	4,821
1990	10,007,546	2,478	185,000	335,000	522,000	5,216
1991	10,263,717	2,738	190,000	364,000	557,000	5,427
1992	10,310,271	2,809	199,000	385,000	587,000	5,693
1993	11,662,463	3,019	242,000	453,000	698,000	5,985
1994	12,447,116	3,214	241,000	488,000	732,000	5,881
1995	13,974,517	3,597	289,000	545,000	838,000	5,997
1996	12,310,999	3,070	239,000	490,000	732,000	5,946
1997	13,763,972	3,356	263,000	552,000	818,000	5,943
1998	13,835,724	3,054	252,000	524,000	779,000	5,630
1999*	15,345,142	3,324	277,000	622,000	902,000	5,878
2000*	17,358,277	2,830	217,000	484,000	714,000	4,113
2001*	8,628,672	248	15,000	46,000	61,000	707
Total	217,526,974	48,300	3,605,000	7,088,000	10,742,000	4,938

Sources: Vehicles involved – FARS 2000, NASS-GES 2000, Registered Vehicles – R. L. Polk & Company

\* Registered vehicles total adjusted to include new car registrations for the full year.

Note: Injury and PDO crash data are estimates and are rounded to the nearest thousand.

**Table 2. Passenger Vehicles Involved in Crashes and Involvement Rates  
Per Registered Vehicle by Model Year and Crash Severity  
2001**

Vehicle Model Year	Registered Vehicles	Number of Vehicles Involved in				Involvement Rate per 100,000 Registered Vehicles
		Fatal Crashes	Injury Crashes	PDO Crashes	All Crashes	
< 1986	25,924,569	4,516	307,000	683,000	995,000	3,838
1986	6,821,463	1,318	80,000	145,000	226,000	3,313
1987	7,622,808	1,558	113,000	176,000	291,000	3,817
1988	9,004,581	2,059	129,000	232,000	363,000	4,031
1989	9,777,521	2,404	153,000	267,000	422,000	4,316
1990	9,442,401	2,418	158,000	286,000	446,000	4,723
1991	9,796,820	2,460	174,000	325,000	501,000	5,114
1992	9,966,803	2,595	172,000	350,000	525,000	5,267
1993	11,270,242	2,954	211,000	423,000	637,000	5,652
1994	12,157,597	3,110	226,000	439,000	668,000	5,495
1995	13,647,228	3,477	269,000	527,000	799,000	5,855
1996	12,090,317	3,019	236,000	462,000	701,000	5,798
1997	13,548,994	3,352	258,000	548,000	809,000	5,971
1998	13,562,367	3,133	243,000	508,000	754,000	5,560
1999	14,971,562	3,348	261,000	596,000	860,000	5,744
2000*	16,288,411	3,460	289,000	639,000	931,000	5,716
2001*	16,571,201	2,721	201,000	437,000	641,000	3,868
2002*	8,879,778	249	16,000	36,000	52,000	586
<b>Total</b>	<b>221,344,663</b>	<b>48,151</b>	<b>3,496,000</b>	<b>7,079,000</b>	<b>10,621,000</b>	<b>4,798</b>

Sources: Vehicles involved – FARS 2001, NASS-GES 2001, Registered Vehicles – R. L. Polk & Company

\* Registered vehicles total adjusted to include new car registrations for the full year.

Note: Injury and PDO crash data are estimates and are rounded to the nearest thousand.

## Findings

Analysis of involvement rates for calendar years 2000 (Table 1) and 2001 (Table 2) reveals that while the number of registered passenger vehicles increased, the number of passenger vehicles involved in crashes decreased, therefore overall involvement rates for passenger vehicles decreased.

Involvement rates, in general, decline with vehicle age. Rates appear to peak when the vehicles are 4 to 8 years old and are more likely to be involved in traffic crashes than others. Vehicles older than that, show a steady decline in involvement. One possible explanation for this downward trend is the reduction in vehicle miles of travel as the vehicle gets older.

- Overall, the number of registered passenger vehicles increased by 1.8% from 2000 to 2001.
- Overall, the number of passenger vehicles involved in crashes decreased by 1.1% from 2000 to 2001.
- Overall, the involvement rates for passenger vehicles decreased by 2.8%.
- The fatal crashes involvement rates decreased by 2% from 2000 to 2001.
- The injury crashes involvement rates decreased by 4.5% from 2000 to 2001
- The property damage only crashes involvement rates decreased by 1.8% from 2000 to 2001.

For additional copies of this research note, please call 1-800-934-8517 or fax your request to (202) 366-3189. For questions regarding the data reported in this research, contact Keith N. Poindexter, 202-366-0018. This research note and other general information on highway traffic safety may be accessed by internet users at: <http://www-nrd.nhtsa.dot.gov/departments/nrd-30/ncsa/AvailInf.html>

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